

JP 06329720, which does not disclose living radical polymerization and therefore, does not anticipate claim 1 and its dependent claims 2, 3, and 15-17.

Moreover, JP 06329720 does not render obvious these claims since, as mentioned above, JP 06329720 merely suggests living anionic polymerization and does not disclose or suggest living radical polymerization.

Therefore, claims 1-3 and 15-17 are not obvious over JP 06329720.

Claims 1-3, 13, 15-19 (the Office Action recited "15-29", but it seems to be a typographical error), 22, 28, and 29 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. 5,242,983 to Kennedy et al. (hereinafter also referred to as "Kennedy"). Kennedy does not anticipate the above claims.

Kennedy suggests methacryloyl telechelic polyisobutylenes, which are produced through cationic polymerization. Along those lines, please see col. 9, lines 30-43, in which polymerization of isobutylene is carried out using TiCl_4 or BCl_3 . A person skilled in the art reasonably understands that the polymerization using Lewis acid such as TiCl_4 or BCl_3 is cationic polymerization.

Also, please see "Journal of Polymer Science: Polymer Chemistry Edition", vol. 21, 1033-1044 (1983), in particular page 1033, the first line and page 1035, lines 22-25; and "Polymer Bulletin", 1.7, 307-314 (1987), particularly page 307, lines 1, 9 and 20-21 (copies attached). These two documents are cited on the front page of Kennedy and clarify that the methacryloyl telechelic polyisobutylenes are produced through cationic polymerization.

Hence, it is clear that Kennedy merely suggests cationic polymerization for producing methacryloyl telechelic polyisobutylenes.

To the contrary, claim 1 recites living radical polymerization.

Therefore, Kennedy, which does not disclose living radical polymerization, does not anticipate claim 1 and its dependent claims 2-3, 13, 15-19, 22, 28 and 29.

Furthermore, Kennedy does not render obvious the above claims since, as mentioned above, Kennedy merely discloses cationic polymerization for producing methacryloyl telechelic polyisobutylenes and does not disclose or suggest living radical polymerization.

Therefore, claims 1-3, 13, 15-19, 22, 28, and 29 are not obvious over Kennedy.

Claims 1-6, 11, 13-20, 22, 23, and 34 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,604,268 to Randen et al (hereinafter also referred to as "Randen"). Randen fails to anticipate claims 1-6, 11, 13-20, 22, 23, and 34.

Randen suggests only polymerization using mercapotoethanol at col. 13, lines 21. There is no disclosure for any other polymerization method. It is a common knowledge for a person skilled in the art that polymerization using mercapotoethanol is radical polymerization using chain transfer agents, but not living radical polymerization. It is also clear from page 10, line 15 to the last line of the instant specification that the chain transfer method is far removed from living radical polymerization.

Hence, it is clear that Randen merely suggests radical polymerization using chain transfer agents.

To the contrary, claim 1 recites living radical polymerization.

Therefore, Randen which does not disclose living radical polymerization, does not anticipate claim 1 and its dependent claims 2-6, 11, 13-20, and 22, 23 and 34.

Moreover, Randen does render obvious the above claims, since, as mentioned above, Randen merely discloses radical polymerization using chain transfer agents and does not disclose or suggest living radical polymerization.

Therefore, claims 1-6, 11, 13-20, 22, 23, and 34 are not obvious over Randen.

Claims 8-12 were rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as being obvious over any one of JP 06329720, Kennedy, or Randen, each one individually. The above discussions of JP 06329720, Kennedy, and Randen are incorporated herein by reference.

Claims 8-12 directly or indirectly depend from claim 1. As mentioned above, claim 1 is not anticipated by or not obvious over JP '720, Kennedy or Randen.

Therefore, claims 8-12 is not obvious over any one of JP '720, Kennedy or Randen for at least these reasons as to why claim 1 is patentable.

Claims 6, 8-10, 21, and 30-33 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,807,937 to Matyaszewski alone or over JP '720 in combination with Matyaszewski. The cited references do not render obvious claims 6, 8-10, 21, and 30-33.

Concerning Matyaszeewski, the Examiner asserts on page 7, lines 16-19 of the Office Action that Matyaszeewski discloses a variety of suitable polymers terminated by a variety of functional groups including acryloyl groups, as can be derived from the meaning of X explained through the whole of body of a patent.

Matyaszeewski recites X as a halogen on col. 8, lines 4-5; col. 15, lines 39-40; and col. 15, lines 43-44.

On col. 17, lines 23-33, X is recited as Cl, Br, I, OR¹⁰ (in which R¹⁰ represents alkyl, alkenyl, alkynyl, phenyl or aralkyl on col. 16, lines 34-45), SR¹⁴ (in which R¹⁴ represents an aryl or alkyl group on col. 17, lines 27-28), SeR¹⁴, OC(=O)R¹⁴, OP(=O)R¹⁴, OP(=O)(OR¹⁴)₂, OP(=O)OR¹⁴, O-N(R¹⁴)₂, S-C(=S)N(R¹⁴)₂, CN, NC, SCN, CNS, OCN, CNO, or N₃.

On col. 27, lines 18-19, X is recited as H, OH, N₃, NH₂, COOH or CONH₂.

On col. 25, lines 38-40, it is described that the polymer product retains the functional group "X" necessary to initiate a further polymerization. Therefore, the functional group "X" is quite remote from the claimed group -OC(O)C(R)=CH₂, which can polymerize itself.

Besides, it is suggested therein that the end functionality of the polymer is COOH, OH, NO₂, N₃, or SCN on col. 39, lines 9-12; and Cl, Br, I, CN, or CO₂R on col. 39, lines 16-17.

No disclosure or suggestion exists in Matyaszeewski that X or the terminal functional group is an acryloyl group or the claimed terminal group of -OC(O)C(R)=CH₂.

Furthermore, the Examiner states on page 8, lines 2-4 of the Office Action that the end functionality of the copolymers of Matyaszeewski, can be easily converted to other functional groups, including acryloyl groups by any conventional and known methods (col. 39, lines 15-25).

This is also a misunderstanding.

On col. 39, lines 15-25, there are mentioned only OH, NH₂, a carboxylic acid -COOH and a carboxylic acid halide like -C(O)Cl as the other functional groups. Matyaszeewski does not recite an acryloyl group or the claimed terminal group of -OC(O)C(R)=CH₂.

Accordingly, Matyaszeewski fails to disclose or suggest that the terminal group can be converted into the claimed terminal group of -OC(O)C(R)=CH₂.

Matyaszeewski suggests ClCH₂-COOCH=CH₂ as a polymerization initiator in Table 11. This can give a polymer having a group -C(O)OCH=CH₂. However, this is quite different from the claimed group -OC(O)C(R)=CH₂. In particular, please note the location of the oxygen atoms.

Accordingly, Matyaszeewski fails to disclose or suggest the claimed terminal group of $-\text{OC}(\text{O})\text{C}(\text{R})=\text{CH}_2$.

When one skilled in the art takes into consideration the entire disclosure of Matyaszeewski, he or she cannot derive that X or the group of the polymer is an acryloyl group or the claimed terminal group of $-\text{OC}(\text{O})\text{C}(\text{R})=\text{CH}_2$.

Therefore, claims 6, 8-10, 21, and 30-33 are not obvious over Matyaszeewski alone.

Concerning the rejection over JP '720 in combination with Matyaszeewski, the Examiner states on page 7, line 9 of the office Action that JP '720 does not elucidate the specific type of living polymerization. Further, the Examiner asserts on page 8, lines 6-11 of the Office Action that since both Matyaszeewski and JP '720 teach the living radical polymerization of vinyl compounds terminated by acryloyl groups, and since Matyaszeewski provides detailed description of mechanism of ATRP, one skilled in the art would have found it obvious to utilize the specificities of Matyaszeewski in a living process of JP '720 in order to achieve the advantages of ATRP.

However, as explained above in detail, JP '720 suggests only living anionic polymerization. JP '720 does not teach or suggest living radical polymerization. The Examiner's statement that JP '720 does not elucidate the specific type of living polymerization is based upon a misunderstanding to JP '720.

To the contrary, Matyaszeewski disclose only living radical polymerization, and does not teach or suggest living anionic polymerization.

Therefore, JP '720 and Matyaszeewski disclose quite different polymerization processes.

No motivations exists to utilize the living radical polymerization of Matyaszeewski in the process of living anionic polymerization of JP '720.

Although JP '720 suggests a terminal group of $-\text{OC}(\text{O})\text{C}(\text{R})=\text{CH}_2$, Matyaszeewski fails to disclose such a group and does not suggest to convert the terminal group into the group of $-\text{OC}(\text{O})\text{C}(\text{R})=\text{CH}_2$.

There is no motivation to convert the terminal functional group of Matyaszeewski to the group of $-\text{OC}(\text{O})\text{C}(\text{R})=\text{CH}_2$ Of JP '720.

Claim 1	JP '720	Matyaszewski
Terminal group of -OC(O)C(R)=CH ₂	Disclosed	Not disclosed or suggested
Living radical polymerization	Not disclosed or suggested	Disclosed

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The prior art must suggest the desirability of the claimed invention, and the fact that references can be combined is not sufficient to establish *prima facie* obviousness (MPEP 2143.01).

Without a suggestion or motivation to combine JP '720 with Matyaszewski, the Examiner's conclusion of obviousness is based on improper hindsight reasoning (see MPEP 2145 X.).

Each of JP '720 and Matyaszewski lacks the claimed requisites, and the motivation or suggestion to combine them is entirely lacking from the prior art.

Accordingly, claims 6, 8-10, 21, and 30-33 are not obvious over JP '720 in combination with Matyaszewski.

Claims 19 and 24-32 were rejected under 35 U.S.C. 103(a) as being unpatentable over any one of JP '720, Kennedy, Randen or Matyaszewski (each one individually) in view of Fifield. These cited references do not render obvious claims 19 and 24-32. The above discussion of JP '720, Kennedy, Randen, and Matyaszewski are incorporated herein by reference.

Fiefield was merely relied upon for a disclosure of photopolymerizable compositions containing a photopolymerizable material having ethylenically unsaturated bonds available for participation in addition (free radical polymerization).

Claims 19 and 24-32 directly or indirectly depend upon claim 1. As mentioned above, claim 1 is not anticipated by nor rendered obvious over JP '720, Kennedy, Randen or Matyaszewski.

Therefore, claims 19 and 24-32 are not obvious over any one of JP '720, Kennedy, Randen, or Matyaszewski (each one individually) in view-of Fifield for at least these reasons as to why claim 1 is patentable.

Concerning the rejections under 35 U.S.C. § 102, the cited references fail to anticipate the present invention. In particular, anticipation requires the disclosure, in a prior art reference, of

each and every recitation as set forth in the claims. *See Titanium Metals Corp. v. Banner*, 227 USPQ 773 (Fed. Cir. 1985), *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 1 USPQ2d 1081 (Fed. Cir. 1986), and *Akzo N.V. v. U.S. International Trade Commissioner*, 1 USPQ2d 1241 (Fed. Cir. 1986).

There must be no difference between the claimed invention and reference disclosure for an anticipation rejection under 35 U.S.C. 102. *See Scripps Clinic and Research Foundation v. Genetech, Inc.*, 18 USPQ2d 1001 (CAFC 1991) and *Studiengesellschaft Kohle GmbH v. Dart Industries*, 220 USPQ 841 (CAFC 1984).

Furthermore, to the extent, the Examiner is relying upon inherency, the cited references do not inherently disclose the present invention. For instance, see *In re Robertson et al.* 49 USPQ2d 1949 (1999 Fed. Cir.). In this case, Robertson, filed a patent application concerning a paper diaper. The application claimed a paper diaper having (a) two fasteners so that the diaper could be worn on a baby and (b) a third fastener for rolling up and fixing the used diaper. The Patent Office rejected the invention under 35 USC 102 based on “Principles of Inherency” as the invention is anticipation” by the prior art.

The prior art (Wilson) relied upon disclosed a diaper, which had two snaps in front and back of the diaper in order to be worn by a baby and which may further have a strip in order to fasten the diaper to baby’s body. Wilson describes that the used diaper can be easily dealt with by rolling up and fixing it with the snaps. Accordingly, the patent Office considered that the diaper of Wilson inherently has an ability to be rolled up and fixed after use and decided that the claimed diaper is anticipated by the diaper of Wilson.

The Federal Circuit; however, held that it is recognized that the constitution of the invention is inherently present in the prior art, only when it is clearly shown that the constitution of the invention is necessarily present in the prior art by external evidence. The invention can not be rejected based on “inherency” because of probability or possibility of the presence of the constitution in the prior art. Also see *Crown Operations International, Ltd. V. Solutia* 24 USPQ2d 1917 (Fed. Cir. 2002).

With respect to the rejections under 35 U.S.C. 103, the mere fact that cited art may be modified in the manner suggested by the Examiner does not make this modification obvious, unless the cited art suggest the desirability of the modification. No such suggestion appears in the cited art in this matter. The Examiner’s attention is kindly directed to *In re Lee*, 61 USPQ2d

1430 (Fed. Cir. 2002), *In re Dembiczak et al.*, 50 USPQ2d 1614 (Fed. Cir. 1999), *In re Gordon*, 221 USPQ 1125 (Fed. Cir. 1984), *In re Laskowski*, 10 USPQ2d 1397 (Fed. Cir. 1989) and *In re Fritch*, 23, USPQ2d 1780 (Fed. Cir. 1992).

In *Dembiczak et al.*, supra, the Court at 1617 stated: "Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references. See, e.g., *C.R. Bard, Inc., v. M3 Sys., Inc.*, 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998) (describing 'teaching or suggestion motivation [to combine]' as in 'essential evidentiary component of an obviousness holding'), *In re Rouffet*, 149 F.3d 1350, 1359, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998) ('the Board must identify specifically ... the reasons one of ordinary skill in the art would have been motivated to select the references and combine them');..."

In view of the above, consideration and allowance are, therefore, respectfully solicited.

In the event that the Examiner believes an interview might serve to advance the prosecution of this application in any way, the undersigned attorney is available at the telephone number noted below.

The Commissioner is hereby authorized to charge any fees or credit any overpayment associated with this communication including any extension fees to Deposit Account No. 22-0185.

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Respectfully submitted,

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